

What is claimed:

1 1. In a communication system having a first communication
2 station operable to transmit data upon a communication channel
3 susceptible to fading, an improvement of apparatus for
4 dynamically selecting at least a first switching threshold used
5 in selection of a modulation parameter, said apparatus
6 comprising:

7 a calculator coupled to receive indications of a selected
8 communication indicia associated with communication
9 characteristics of the communication channel during a selected
10 interval, said calculator for selecting the at least the first
11 switching threshold, the first switching threshold selected by
12 said calculator to at least satisfy a first performance criteria
13 and to satisfy at least a second performance criteria.

14 2. The apparatus of claim 1 wherein selection of the first
15 switching threshold by said calculator maximizes the first
16 performance criteria while also satisfying the at least the
17 second performance criteria.

1 3. The apparatus of claim 1 wherein the selected
2 communication indicia to which said calculator is coupled to
3 receive indications thereof comprises error indicia
4 representative of errors introduced upon the data during
5 communication upon the communication channel.

1 4. The apparatus of claim 3 wherein the data comprises
2 frame-formatted data and wherein the error indicia to which said
3 calculator is coupled to receive comprises a frame error rate
4 (FER) indication.

1 5. The apparatus of claim 1 wherein the data transmitted
2 by the first communication station is transmitted to a second
3 communication station, wherein the second communication station
4 is coupled in a feedback arrangement with the first communication
5 to return to the first communication station a report
6 representative of the communication characteristics of the
7 communication channel, and wherein the selected communication
8 indicia to which said calculator is coupled to receive is based
9 upon the report returned to the first communication station.

1 6. The apparatus of claim 5 wherein the data transmitted
2 by the first communication station is formatted into a plurality
3 of data frames which are successively transmitted upon the
4 communication channel, the plurality including a previously-
5 transmitted data frame and a subsequent data frame, the report
6 returned to the first communication station subsequent to
7 reception of the previously-transmitted frame and wherein the
8 first switching threshold selected by said calculator is
9 selected, and the modulation parameter selected therefrom is
10 selected, prior to transmission of the subsequent data frame by
11 the first communication station.

1 7. The apparatus of claim 6 wherein the selected
2 communication indicia to which said calculator is coupled to
3 receive indications thereof comprises throughput indicia
4 representative of a throughput rate at which the plurality of
5 data frames are transmitted on the communication channel.

1 8. The apparatus of claim 7 wherein the selected
2 communication indicia to which said calculator is coupled to
3 receive indications thereof further comprises a frame error rate
4 (FER) indication, the throughput rate being negatively related to
5 the FER indication.

1 9. The apparatus of claim 1 further comprising a
2 modulation parameter selector coupled to said calculator, said
3 modulation parameter selector for selecting the modulation
4 parameter by which the data is operated upon by the first
5 communication station prior to transmission upon the
6 communication channel.

1 10. The apparatus of claim 9 wherein the modulation
2 parameter comprises a modulation-type by which the data is
3 modulated by the first communication station.

1 11. The apparatus of claim 9 wherein the modulation
2 parameter comprises an encoding rate by which the data is encoded
3 by the first communication station.

1 12. The apparatus of claim 1 wherein the first
2 communication station comprises a processor and wherein said
3 calculator comprises an algorithm executable at the processor.

1 13. The apparatus of claim 12 wherein said calculator
2 comprises a enhanced linear-reward-inaction (LRI) learning
3 algorithm in which the selected communication indicia form inputs
4 to the LRI algorithm.

14. The apparatus of claim 13 wherein the inputs formed of
the selected communication indicia comprise teaching inputs to
the LRI.

15. The apparatus of claim 14 wherein the teaching inputs
comprise an indication related to the first performance criteria
and an indication related to the second performance criteria.

1 16. In a method for communicating in a communication system
2 having a first communication station operable to transmit data
3 upon a communication channel susceptible to fading, an
4 improvement of apparatus for dynamically selecting at least a
5 first switching threshold used in selection of a modulation
6 parameter, said apparatus comprising:

7 selecting the at least the first switching threshold
8 responsive to indications of a selected communication indicia
9 associated with communication characteristics of the
10 communication channel during a selected interval, the first
11 switching threshold selected to at least satisfy a first
12 performance criteria and to satisfy at least a second performance
13 criteria; and

14 selecting the modulation parameter by which the data is
15 operated upon by the first communication station prior to
16 transmission upon the communication channel.

1 17. The method of claim 16 wherein the first switching
2 threshold selected during said operation of selecting the at
3 least the first switching threshold maximizes the first
4 performance criteria while also satisfying the at least the
5 second performance criteria.

1 18. The method of claim 16 wherein the first communication
2 station comprises a processor and wherein said operation of
3 selecting the at least the first switching threshold is performed
4 by executing an algorithm at the processor.

1 19. The method of claim 18 wherein the algorithm comprises
2 a enhanced linear-reward-inaction (LRI) learning algorithm in
3 which the selected communication indicia form inputs to the LRI
4 algorithm.

1 20. The method of claim 19 wherein the inputs to the LRI
2 algorithm comprise a first indication related to the first
3 performance criteria and a second indication related to the
4 second performance criteria.